

ABSTRACT

A liquid crystal display apparatus, a liquid crystal display device and a liquid crystal display system are provided. The liquid crystal display apparatus includes a liquid crystal display device having a light modulating unit, a first polarizing filter, arranged on the front surface of the light modulating unit and a second polarizing filter arranged on the back side of the light modulating unit. The liquid crystal display apparatus also includes a back light on the back side of the liquid crystal display device, fixedly mounted on left and right sides of a polarizing filter unit for the right eye and a polarizing filter unit for the left eye, and a Fresnel lens arranged on the back side of the liquid crystal display device for collecting the illuminating light from the back light for illuminating the so-collected light on the liquid crystal display device. The liquid crystal display apparatus also includes an infrared LED arranged on the front side of the liquid crystal display device for illuminating the light on the head of a viewer, and light receiving devices arranged on the front sides of the polarizing filter unit for the right eye and the polarizing filter unit for the left eye at a preset spacing from the front sides. Moreover, the liquid crystal display apparatus includes a position control unit for processing and comparing the volumes of the received light in the light receiving devices to control the position of the back light in the left-and-right direction, a liquid crystal display device and a liquid crystal display system. A stereo image appreciated by the viewer is automatically adjusted against position variations of the viewer's head.